

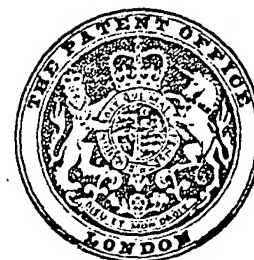
# PATENT SPECIFICATION (11)

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## (54) ABRASIVE DEVICES

(71) I, THOMAS HAROLD NOEL BROGDEN, a British Subject of 83 Thornton Avenue, Macclesfield, Cheshire, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to abrasive devices. For manually abrading materials such as wood, metal, plastics or plaster, it is known to use "glass paper" or "emery cloth" wrapped around a wooden block. With this arrangement the disadvantages may arise that due to the fact that the abrasive material is inflexibly supported it may not be possible to achieve uniform abrasion of a non-planar surface and the abrasive material may suffer a substantial reduction in abrasive properties before it has become appreciably worn due to clogging of the abrasive particles. Further, it is difficult to ensure secure location of the abrasive material on the block in a simple, convenient and inexpensive manner.

According to the present invention there is provided an abrasive device comprising a block or pad of a resiliently deformable material formed from fragments of cellular material bonded together and, abrasive particles secured to one or more faces of the block or pad by means of a flexible adhesive.

With this arrangement, by virtue of the deformability of the abrasive surface of the device, uniform abrasion of a non-planar surface can be effected or can be more nearly effected than is the case with a conventional arrangement of glass paper or emery cloth wrapped around a rigid supporting block.

Further in so far as the abrasive surface is deformable, excessive clogging of the abrasive particles can be prevented since clogging material will tend to be displaced from the abrasive surface during use and/or can be displaced when desired by deformation of the surface for example by flexing thereof.

Still further, in so far as the block or pad is an integral part of the device the problem of ensuring secure location of the abrasive

surface relative to the block or pad during use is obviated. When the abrasive properties of the device are appreciably reduced the entire device can be discarded and replaced since it is possible to form the device from inexpensive materials and since any extra cost of the device relative to conventional "glass paper" or "emery cloth" may be compensated at least to some extent by the possible increased life of the device due to prevention of excessive clogging as aforementioned.

The resiliently deformable material of the block is preferably formed from fragments of a resilient cellular material such as polyurethane bonded together by a flexible solid material. Such resiliently deformable materials are described in the specifications of British Patents Nos. 869,624; 898,712; 939,868 and 1,029,961 and reference is made to such specifications for details of methods of manufacture, starting materials and properties of the products.

Preferably, the material of the block or pad whilst being deformable is sufficiently rigid as to be self-supporting and as to enable an adequate and substantially uniform pressure to be applied in use by the abrasive surface to the working surface without substantial deformation of the block or pad. Preferably also the material of the block or pad is such that it has a substantially smooth and continuous surface.

A particularly satisfactory material for the block or pad is a reconstituted material formed from chips of foamed polyether or polyester materials, such as the material known as Dunlopreme DR65 or Kayfoam K.C.10 having a density within the range of 10 to 12 lb./cu. ft. Dunlopreme and Kayfoam are Registered Trade Marks.

The block or pad may be formed in any suitable shape, for example it may be of rectangular, triangular or circular form and it may have any suitable dimensions. In a preferred embodiment of the invention the device incorporates a block of rectangular form  $4\frac{1}{2}$  ins.  $\times$   $2\frac{3}{4}$  ins.  $\times$   $1\frac{1}{2}$  ins. and all faces of the block have abrasive particles bonded thereto except for the two

5 smallest faces thereof each of which is free  
of abrasive particles and may carry printed  
matter such as advertising and/or infor-  
mative matter and/or may be coloured or  
decorated for aesthetic purposes. The block  
may be suitably shaped to facilitate manual  
handling thereof. If desired, the block or  
pad may have different grades of abrasive  
particles secured to different faces thereof,  
10 thus, for example, the rectangular block de-  
scribed above may have a coarse grade  
abrasive grain such as grade 36 Aluminium  
Oxide applied to one side face and edge face  
and a medium grade abrasive grain such as  
15 grade 60 Aluminium Oxide applied to the  
other side face and edge face.

20 In general, the abrasive particles may be  
of the kind used with conventional abrasive  
materials, such as ground bottle glass, garnet  
or carborundum, the nature and size of the  
particles being selected, as with conventional  
abrasive materials, in accordance with the  
desired use.

25 The adhesive may be any suitable ad-  
hesive preferably having a flexibility at least  
corresponding to the flexibility of the block  
or pad. Preferably the adhesive is a con-  
ventional natural or synthetic rubber based  
adhesive such as Evostick 528 or Bostik  
30 Clear Adhesive. Evostick and Bostik are  
Registered Trade Marks.

35 It is visualised that an abrasive device  
according to the present invention will have  
particular application for manual use in  
domestic circumstances although it will be  
appreciated that the invention is not intended  
to be restricted to such use and thus the  
device may be used for other purposes for  
example in power abrasive apparatus. Thus,

40 for example, the device may incorporate a  
pad (for example, a circular or rectangular  
pad  $\frac{1}{4}$  in. thick) having abrasive particles  
applied to one surface and having means  
45 associated with its other surface for attaching  
the device to a powered rotary or orbital  
sanding device or the like. Such means may  
comprise a layer of a contact adhesive pro-  
vided with a removable protective film.

#### WHAT I CLAIM IS:—

50 1. An abrasive device comprising a block  
or pad of a resiliently deformable material  
formed from fragments of cellular material  
bonded together, and abrasive particles  
55 secured to one or more faces of the block or  
pad by means of a flexible adhesive.

60 2. A device according to claim 1 wherein  
the resiliently deformable material is formed  
from fragments of a resilient cellular material  
such as polyurethane bonded together by a  
flexible solid material.

65 3. A device according to claim 1 or claim  
2 wherein the adhesive comprises a rubber  
material.

70 4. A device according to any one of claims  
1 to 3 wherein the block or pad has different  
grades of adhesive particles secured to  
different faces thereof.

5. An abrasive device according to any  
one of claims 1 to 4 substantially as herein-  
before described.

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